BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 20554

In the Matter of	)	
	)	
Federal-State Joint Board on	)	
Universal Service	)	CC Docket No. 96-45
	)	
	)	DA 99-2985

COMMENTS OF CITIZENS COMMUNICATIONS

Citizens Utilities Company, on behalf of itself and its incumbent local exchange telecommunications subsidiaries (collectively, Citizens),[1] by its attorney, hereby submits its comments in response to the Commission's December 22, 1999 Public Notice in the above-captioned proceeding.[2] In the Notice, the Commission seeks comment on requests by some state commissions and the Rural Utilities Service (RUS) to redefine "voice grade access" in Section 54.101 of the commission's rules, 47 C.F.R. § 54.101. That rule requires a minimum frequency range of 300Hz to 3,000 Hz for voice grade circuits supported by federal universal service. Petitioners seek to expand the frequency range to a minimum of 200 Hz or 300 Hz to 3,400 Hz or 3,500 Hz. Petitioners' stated

[1] Citizens Utilities Company, through its subsidiaries, provides telecommunications services, electric distribution, natural gas transmission and distribution, and water and wastewater treatment services to more than 1,600,000 customer connections in 20 states. Citizens Utilities Company subsidiary incumbent local exchange carriers (Citizens LECs) provide local exchange services in rural study areas in Arizona, California, Idaho, Montana, Nevada, New Mexico, New York, Oregon, Pennsylvania, Tennessee, Utah, West Virginia, and Wisconsin. In addition, Citizens has announced plans to divest its non-telecommunications operations and to acquire additional local exchange properties in Arizona, California, Colorado, Illinois, Iowa, Minnesota, Montana, Nebraska, North Dakota, and Wyoming.

[2] *Common Carrier Bureau Seeks Comment on Requests to Redefine "Voice Grade Access" for Purposes of Federal Universal Service Support*, CC Docket No. 96-45, DA 99-2985 (rel. Dec. 22, 1999) (*Notice*).

goal is to ensure that rural users of 28.8K modems achieve reasonably similar data transmission speeds as non-rural users of 28.8K modems.[3]

I. Introduction

The Commission originally set the minimum required bandwidth for voice-grade circuits at 500Hz to 4,000 Hz,[4] but later revised the minimum required bandwidth to the current 300Hz to 3,000 Hz. In making this revision, the Commission paid heed to the fact that its original minimum frequency range requirement exceeded those provided under industry standards.[5]

The Commission should again avoid establishing requirements for voice-grade circuits that go beyond industry standards, especially for the purpose of increasing the performance of services for which the network was not designed and that are not supported by the universal service program. Moreover, the Commission should reject this back-door attempt to implement universal service requirements for data services. Any effort to extend universal service requirements and support to data services should be undertaken forthrightly in an appropriate proceeding aimed at examining the advisability of providing universal service support for data services, the kinds of data services that should be supported, the level of support, and the funding mechanism.

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3 *Notice* at 1-2.

4 *Federal-State Joint Board on Universal Service*, Report and Order, 12 FCC Rcd 8776, 8811 (1997), *as corrected by Federal State Joint Board on Universal Service*, Errata, FCC 97-157 (Rel. June 4, 1997), *aff'd in part, rev'd in part, remanded in part sub nom. Texas Office of Public Utility Counsel v. FCC*, 183 F.3d 393 (5th. Cir. 1999), *motion for stay granted in part*, No. 97-60421 (Sept. 28, 1999), *petitions for rehearing and rehearing en banc denied*, No. 97-60421 (Sept. 28, 1999) (*Universal Service Order*).

5 *Federal-State Joint Board on Universal Service, Access Charge Reform, Price Cap Performance Review for Local Exchange Carriers, Transport Rate Structure and Pricing End User Common Line Charge*, Fourth Report and Order on Reconsideration, CC Docket No. 96-45, Report and Order, CC Docket Nos. 96-45, 96-262, 94-1, 91-213, 95-72, 13 FCC Rcd 5318, 5328-29 (1997) (*Fourth Reconsideration Order*).

II. The Commission Should Reject This Back-Door Approach to Data Universal Service

The petitions expressly seek to modify the technical requirements for voice-grade circuits supported by universal service solely to benefit data services. Data services, however, are not currently subject to universal support. The petitions therefore appear to assume that data services are worthy of universal support and that modifying voice-grade requirements is an appropriate method for bringing data services under the universal service umbrella. Citizens strongly disagrees with these implicit assumptions.

Whether data services should be subject to universal service support is a major and historically significant policy issue that will have far-reaching implications for the telecommunications industry and the daily lives of all Americans. It is impossible to understate the significance of the resolution of this issue, which is on par with the historic policy goals of making electric service and voice telephony ubiquitous. This is not an issue to be addressed lightly or haphazardly. It is therefore critically important to explicitly and directly address first the fundamental question of whether to provide universal service support for data services. If the decision is made to support data services, then the secondary questions of which services should be supported and what kind of funding mechanism should be used to provide that support will be ripe for discussion. The answers to these questions should be determined on the basis of a full record expressly developed to address these questions. The petitions and the *Notice* fail to accord this weighty issue the care and deliberation it deserves and demands.

The approach to universal service espoused in the petitions is an obvious attempt to bring data services into the universal service house through the back door. This is unsound procedure and policy. It avoids the fundamental questions outlined above and it alters voice technical parameters for

purposes unrelated to ensuring quality, reliable, and ubiquitous voice service.[6] Technical requirements for data services should be examined expressly as data technical requirements.

III. The Commission Should Not Now Modify Voice-Grade Requirements to Benefit Data Services

The public switched telephone network (PSTN) was designed for voice communications, and transmits voice communications with excellent reliability and quality. This is the result of the PSTN being optimized to provide voice transmission. Although the PSTN fortuitously is capable of limited data transmission, it is not optimized for data. Indeed, some techniques used to optimize the PSTN for voice impede data transmission. Load coils are a prime example. More specifically, beyond 18,000 feet the analog signal transmitted over copper loops degrades and must be reshaped by load coils. The load coils thus facilitate voice transmission on loops of over 18,000 feet in length. These same load coils, however, impede data transmission.

This is only one example, but it points out the differences between voice and data transmission and how a network engineered for voice is not necessarily compatible with and certainly is not optimal for data. Thus, whether to support a separate data network or to provide support for re-engineering the current PSTN to better accommodate both voice and data is a policy issue that needs to be resolved. Unfortunately, this is not even identified as an issue in the *Notice*, much less addressed explicitly and straightforwardly. Rather than immediately jumping into changing voice technical parameters for the benefit of data, the Commission should first inquire into whether this is the appropriate method of providing data universal service.

IV. Citizens Already Provides Expanded Bandwidth

[6] Indeed, it would no longer be correct to term the subject technical requirements as "voice technical requirements." Continuing to use this appellation, however, maintains the charade of effectively implementing data universal service without admitting to doing so. It also avoids conducting an appropriate proceeding to examine whether data universal service should be implemented.

Citizens' network employs line cards in its switches that have a frequency range of 200 Hz to 3,400 Hz. Thus, Citizens already provides bandwidth that is within the expanded limits being considered by the Commission. Further, changing the minimum required frequency range to 200 Hz to 3,400 Hz would result in no changes to Citizens' network and would not increase data transmission speed over it.

V. Further Expansion of the Required Frequency Range Could Be Very Costly

As noted, Citizens currently uses line cards that have a frequency range of 200Hz to 3,400 Hz. Going beyond this frequency range to the 3,500 Hz upper minimum that is being considered by the Commission would be very costly. To meet the 3,500 Hz standard, Citizens would have to replace all of its line cards with new line cards capable of handling the expanded frequency range. Following is a simplified example to demonstrate the magnitude of the costs that Citizens would incur to meet a 3,500 Hz requirement.[7]

While pricing for new expanded frequency range line cards is not currently available, the current central office line cards cost $176.00 for the DMS switches and $640.00 for the DCO switches (6 lines per card or $106.00 per line) Citizens uses.[8] Thus, assuming that only central office line cards would need to be replaced,[9] Citizens would incur a cost of either $106.00 or $176.00 per line to increase the frequency range at the upper minimum by 100Hz.

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[7] The example assumes that no digital loop carrier is used and thus only central office line cards would need to be replaced. It also assumes the most basic central office interface, which requires only one line card, is used. Depending on the extent to which digital loop carrier is used and the kinds of central office interfaces used, it is possible that as many as three line cards would have to be replaced for a given loop. Thus, the actual costs would likely be higher.

[8] This excludes the very small portion of Citizens' New York network that uses Lucent switches. Data for these switches was not immediately available. The impact of omitting these switches from the calculation should be *de minimus*.

[9] *See* note 7 *supra*.

Citizens currently serves approximately 931,368 access lines. Of these, 115,325 lines are served by DCO switches and 866,043 lines are served by DMS switches. Thus, the cost to Citizens of going to a 3,500 Hz upper minimum would be at least $165 million just for hardware alone, excluding installation and testing.

VI. The Required Investment to Meet the 3,500 Hz Standard Would Have a Significant Impact on Universal Service

The impact of making this magnitude of investment on a smaller, rural carrier such as Citizens is significant. Assuming that the national average cost per line did not change, Citizens would be eligible for an additional $14 million in federal universal service funding. This is an extremely small offset to the required $165 million expenditure. The more likely scenario, however, is that the national average line cost will increase because it is likely that many carriers will have to make similar investments. Thus, it is possible that Citizens would receive no additional universal service funding to offset this very large investment.

The true magnitude of this $165 million investment is obvious when it is compared to Citizens' capital expenditure in 1998 of $201 million.[10] Requiring such a large additional investment would have a serious, detrimental impact on Citizens and on universal service.

[10] Annual Report, Citizens Utilities Company (1998). This is the latest year for which capital expenditure data is publicly available. This excludes non-communications lines of business (gas, electric, and water and wastewater).

VII. Other Factors Affect Data Transmission Speed

There are several factors other than bandwidth that affect data transmission speed on the PSTN. These include the length of the loop, condition of the line, gauge of the line, and the existence of capacitors, load coils, and bridged taps. Anything in the loop that increases resistance reduces the data transmission speed. Load coils, capacitors, and bridged taps increase resistance, as do contaminants such as water that may get inside the protective covering of a cable. Longer loops and smaller gauge lines also have greater resistance. Thus, it is not clear that increasing the frequency range on a given loop will result in any particular increase in data transmission speed.

VIII. Expanding the Minimum Voice Grade Frequency Range Is A Poor Investment

There are many other investments that would yield much more data "bang for the buck" than expanding the minimum voice grade frequency range. While the hypothetical $165 million investment discussed above would likely result in very small gains in data transmission speed, a similar investment in other technologies, such as xDSL, would yield significantly larger increases in data transmission speed.

IX. Conclusion

The Commission should approach the issue of universal service for data services directly and forthrightly rather than through the back door as suggested in the petitions and the *Notice*. Citizens urges the Commission to establish a proceeding to inquire into whether data services should be supported by universal service, to determine which data services to support, and to determine the appropriate funding mechanism. The Commission should also inquire into whether and how the PSTN should be modified to better enable data services.

Citizens already provides a frequency range of 200 Hz to 3,400 Hz. Going to 3,500 Hz, however, would cost at least $165 million, but would result in additional universal service funding

to Citizens of only $14 million at the most. The detrimental impact of this expenditure on Citizens and on universal service would be significant. Further, even if the Commission were to require this additional investment, it is not clear that there would be any significant increase in the data speeds achievable over any given loop. Too many factors other than bandwidth affect achievable speed.

The expenditure required to expand the voice grade frequency range as suggested is a poor investment in light of the likely small increase in data transmission speed. Investment in other technologies will likely yield significantly larger increases.

For all of these reasons, the Commission should deny the petitions.

Respectfully Submitted,

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